

REMARKS

A. Request for Reconsideration

Applicant has carefully considered the matters raised by the Examiner in the outstanding Office Action but remains of the position that patentable subject matter is present. Applicant respectfully requests reconsideration of the Examiner's position based on the amendments to the claims and the following remarks.

B. Claim Status and Amendments

Claims 1-8 are presented for further prosecution.

All the claims have been amended herein to place them into conventional US format.

Claims 1, 4, 7 and 8 have been amended by further define the "high filler content" is of 15% to 500% by weight of the resin.

Claims 4, 7 and 8 have been amended to explicitly specify the step for the methods.

No new matter was added.

C. The Invention

The present invention relates to an elastomeric composition having a high filler content, wherein the term "high filled" is defined as of 15% to 500% by weight of resin, which additionally contains 1 to 400% by weight of resin of microsilica as a modifier to improve the processability.

As discussed in the specification, the "high filler loading" means an elastomeric composition has a filler loading amount such that the viscosity will increase to such a level that the composition can not be processed. The invention solves this processibility problem by adding 1 to 400 % by weight of microsilica to such a highly loaded elastomeric composition already having a high filler content of 15% to 500% by weight.

D. The Office Action

In the Office Action the Examiner made both formal rejections and prior art rejections.

a) Formal Rejections

1. Specification

The title of the invention had been objected as being not descriptive.

Applicant has amended the Title to emphasize that the microsilica is added to an elastomeric composition where the elastomeric composition is highly loaded with filler, a non-microsilica filler.

2. Claim Rejections under 35 USC § 101

Claims 7 and 8 had been rejected under 35 U.S.C. 101 as being an improper definition of a process.

Applicant has amended claims 7 and 8 to explicit the step for the methods.

3. Claim Rejections under 35 USC § 112

Claims 1-8 had been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the undefined term "high filler content."

Applicant has amended the claims to clarify that the "high filler content" is of 15% to 500% by weight of the resin. As discussed on page 1, line 27 to page 2, line 2 in the application, high filler loading depends on the polymer may vary from 15 % fillers by weight of resin up to 500 % by weight. It is respectfully submitted that the claims are definite in this regard.

Further, claims 7 and 8 had been rejected as being indefinite without any active, positive steps.

As mentioned in item 2 above, Applicant has amended claims 7 and 8 to make the step for the methods explicit.

4. Double Patenting Rejections

Claims 1-6 and 8 had been rejected as being conflict with claims 1-5 of Application No. 11/718590.

It is respectfully submitted that the amended claim are patentably distinguishable over the cited application and the rejection is moot in view of the amendments to the claims.

In addition, the present application was filed on March 8, 2006, which is before the filing date of the cited application 11/718,590 filed on May 3, 2007. Therefore, the Double Patenting rejections should be held in abeyance until this case is ready for allowance.

b) Prior Art Rejections

1. Claim Rejections - 35 USC § 102

i) Claims 1-7 had been rejected under 35 U.S.C. 102(b) as being anticipated by Columbian Carbon Company (GB 1135464 A).

The Examiner asserts that Columbian teaches an amorphous silicon dioxide for incorporation in rubber for the purpose of improving the properties of rubber compounds and further asserts that the amorphous silicon dioxide corresponds to the microsilica in the present invention. Applicant respectfully disagrees.

First of all, Columbian does not relate to a resin already having high filler content. Colombian teaches a treatment of silicon dioxide. The example for the use of the treated silica in rubber shows that the rubber is not a

highly filled material. Shown at Table 3, silica is the only filler used for an elastomeric rubber with other small portion of the ingredients for the vulcanization, where the typical cure package comprises the cure agent sulfur, activation agents zinc oxide and stearic acid, together with other ingredients as antidegradants or retarding agents. Clearly, the rubber used in Columbian is not a high loaded resin.

Further, Columbian teaches producing colloidal silica by hydrolyzing vapors of silicon halide. This amorphous colloidal silica is acidic, which is different from the microsilica used in the present invention. Columbian silica has a much smaller particle size. It has a specific surface area of about $100 \text{ m}^2/\text{g}$ compared to $15\text{-}40 \text{ m}^2/\text{g}$ for the microsilica. As discussed in lines 5-15 on page 3, the microsilica in the invention is particulate silica with the particle being substantially spherical and having an average size of about 0.15 mu.m. It is this particulate silica improves the processibility of the highly loaded elastomeric compounds.

Therefore, it is respectfully submitted that Columbian Carbon is not an analogous art and it does not teach a high filler loaded elastomeric composition and doesn't teach the addition of microsilica.

ii) Claims 1-7 had been rejected under 35 U.S.C. 102(b) as being anticipated by Danielssen et al. (W000/27911)

The Examiner asserts that Danielssen teaches a thermoplastic resin composition containing between 3% and 400% by weight of filler, with the filler comprising talc and microsilica and further asserts the "thermoplastic resin" encompasses elastomers and the improved processability is inherent.

Danielssen provides a thermoplastic material having high stiffness and high impact strength. It deals with an entirely different technical problem. First, Danielssen is directed to a thermoplastic product, which is different from the claimed elastomeric compositions in the invention.

Most importantly, Danielssen does not relate to elastomers having "high filler content. In fact, in all the examples in Denielssen, the basic material is not filler at all. Because this unloaded thermoplastic material has no problem in processing, processability is not an issue in Danielssen.

It is an unexpected discovery in the present invention that "[I]t has surprisingly been found that elastomeric compounds according to the present invention have low viscosity and good processing properties compared to elastomeric compounds having the same high filler loading but do not contain microsilica." (See page 3, lines 20 to 23 in the specification)

Therefore, it is respectfully submitted that Danielssen does not teach high filler loaded elastomeric compositions with addition of microsilica for processability.

iii) Claims 1-7 had been rejected under 35 U.S.C. 102(b) as being anticipated by Underwood et al. (US 4,301,060)

The Examiner asserts that Underwood teaches a solid resin composition of a thermoplastic resin and particulate amorphous silica as a filler, in loadings as high as 250 parts per hundred parts of resin and further asserts that "thermoplastic resin" includes elastomers.

First of all, Underwood does not relate to elastomeric resins although it is stated that the thermoplastic can include elastomers. Underwood clearly states:

"The expression "thermoplastic resin" herein includes not only a thermoplastic resin per se, but also a mixture thereof, as well as a blend of a thermoplastic resin **with another material, e.g. an elastomer**, for instance a nitrile rubber."

It further clarifies that:

"The so-called thermoplastic rubbers (thermoelastomers) [are] also included **since, as they include elastomeric domains and thermoplastic domains in the same polymer, they can be regarded as an "internal blend" of a thermoplastic resin and an elastomer.** Despite their name, the thermoplastic rubbers are to be regarded **as plastics** rather than rubbers as such, since no vulcanization is used in their manufacture." (see column 2, lines 36-46, emphasis added)

It is well known to the skilled of the art that, vulcanization is a thermoset process, which is contrasted strongly with thermoplastic processes (the melt-freeze process). Thus, vulcanization, as an irreversible cure

reaction, defines **cured rubber compounds** as thermoset materials, which do not melt on heating, and places them outside the class of thermoplastic materials.

More importantly, Underwood does not used elastomers already having "high filler content". It should be pointed out that none of the examples in Underwood contains high conventional filler content in addition to microsilica.

Therefore, it is respectfully submitted that Underwood does not teach high filler loaded elastomeric compositions and can not be used to anticipate the present invention.

2. Claim Rejection under 35 USC § 103

Claim 8 had been rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood (US 4,301,060) in view of Wypych.

Applicant has amended claim 8 to recite the "high filler content", which emphasizes that the resin is highly filled prior to the addition of microsilica.

It has been shown that Underwood does not teach high filler loaded elastomeric compositions with addition of microsilica for processability. Wypych does not remedy this deficiency. Wypych only teaches that aluminium trihydrate and magnesium hydroxide are conventional flame retarding agents for polymers. Wypych does not teach or suggest that microsilica combined with aluminium trihydrate and/or magnesium hydroxide will increase the limiting oxygen index of high filler loaded elastomeric compositions.

Therefore, it is respectfully submitted that the combination of Underwood and Wypych does not render the present invention as in Claim 8 unpatentable.

E. Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested.

Should any extensions of time or fees be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit account #02-2275.

Respectfully submitted,

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